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CAMBOARD Electronics

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User's Manual

AVT 100

Audio/Video Tuner

68-905-01 **Rev F**
10 06

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Precautions

Safety Instructions • English

This symbol is intended to alert the user of important operating and maintenance (servicing) instructions in the literature provided with the equipment.

This symbol is intended to alert the user of the presence of uninsulated dangerous voltage within the product's enclosure that may present a risk of electric shock.

Caution

Read Instructions • Read and understand all safety and operating instructions before using the equipment.

Retain Instructions • The safety instructions should be kept for future reference.

Follow Warnings • Follow all warnings and instructions marked on the equipment or in the user information.

Avoid Attachments • Do not use tools or attachments that are not recommended by the equipment manufacturer because they may be hazardous.

Consignes de Sécurité • Français

Ce symbole sert à avertir l'utilisateur que la documentation fournie avec le matériel contient des instructions importantes concernant l'exploitation et la maintenance (réparation).

Ce symbole sert à avertir l'utilisateur de la présence dans le boîtier de l'appareil de tensions dangereuses non isolées posant des risques d'électrocution.

Attention

Lire les instructions• Prendre connaissance de toutes les consignes de sécurité et d'exploitation avant d'utiliser le matériel.

Conserver les instructions• Ranger les consignes de sécurité afin de pouvoir les consulter à l'avenir.

Respecter les avertissements • Observer tous les avertissements et consignes marqués sur le matériel ou présentés dans la documentation utilisateur.

Eviter les pièces de fixation • Ne pas utiliser de pièces de fixation ni d'outils non recommandés par le fabricant du matériel car cela risquerait de poser certains dangers.

Sicherheitsanleitungen • Deutsch

Dieses Symbol soll dem Benutzer in der im Lieferumfang enthaltenen Dokumentation besonders wichtige Hinweise zur Bedienung und Wartung (Instandhaltung) geben.

Dieses Symbol soll den Benutzer darauf aufmerksam machen, daß im Inneren des Gehäuses dieses Produktes gefährliche Spannungen, die nicht isoliert sind und die einen elektrischen Schock verursachen können, herrschen.

Achtung

Lesen der Anleitungen • Bevor Sie das Gerät zum ersten Mal verwenden, sollten Sie alle Sicherheits-und Bedienungsanleitungen genau durchlesen und verstehen.

Aufbewahren der Anleitungen • Die Hinweise zur elektrischen Sicherheit des Produktes sollten Sie aufbewahren, damit Sie im Bedarfsfall darauf zurückgreifen können.

Befolgen der Warnhinweise • Befolgen Sie alle Warnhinweise und Anleitungen auf dem Gerät oder in der Benutzerdokumentation.

Keine Zusatzgeräte • Verwenden Sie keine Werkzeuge oder Zusatzgeräte, die nicht ausdrücklich vom Hersteller empfohlen wurden, da diese eine Gefahrenquelle darstellen können.

Instrucciones de seguridad • Español

Este símbolo se utiliza para advertir al usuario sobre instrucciones importantes de operación y mantenimiento (o cambio de partes) que se desean destacar en el contenido de la documentación suministrada con los equipos.

Este símbolo se utiliza para advertir al usuario sobre la presencia de elementos con voltaje peligroso sin protección aislante, que puedan encontrarse dentro de la caja o alojamiento del producto, y que puedan representar riesgo de electrocución.

Precaucion

Leer las instrucciones • Leer y analizar todas las instrucciones de operación y seguridad, antes de usar el equipo.

Conservar las instrucciones • Conservar las instrucciones de seguridad para futura consulta.

Obedecer las advertencias • Todas las advertencias e instrucciones marcadas en el equipo o en la documentación del usuario, deben ser obedecidas.

Evitar el uso de accesorios • No usar herramientas o accesorios que no sean especificamente recomendados por el fabricante, ya que podrian implicar riesgos.

Warning

Power sources • This equipment should be operated only from the power source indicated on the product. This equipment is intended to be used with a main power system with a grounded (neutral) conductor. The third (grounding) pin is a safety feature, do not attempt to bypass or disable it.

Power disconnection • To remove power from the equipment safely, remove all power cords from the rear of the equipment, or the desktop power module (if detachable), or from the power source receptacle (wall plug).

Power cord protection • Power cords should be routed so that they are not likely to be stepped on or pinched by items placed upon or against them.

Servicing • Refer all servicing to qualified service personnel. There are no user-serviceable parts inside. To prevent the risk of shock, do not attempt to service this equipment yourself because opening or removing covers may expose you to dangerous voltage or other hazards.

Slots and openings • If the equipment has slots or holes in the enclosure, these are provided to prevent overheating of sensitive components inside. These openings must never be blocked by other objects.

Lithium battery • There is a danger of explosion if battery is incorrectly replaced. Replace it only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Avertissement

Alimentations• Ne faire fonctionner ce matériel qu'avec la source d'alimentation indiquée sur l'appareil. Ce matériel doit être utilisé avec une alimentation principale comportant un fil de terre (neutre). Le troisième contact (de mise à la terre) constitue un dispositif de sécurité : n'essayez pas de la contourner ni de la désactiver.

Déconnexion de l'alimentation• Pour mettre le matériel hors tension sans danger, déconnectez tous les cordons d'alimentation de l'arrière de l'appareil ou du module d'alimentation de bureau (s'il est amovible) ou encore de la prise secteur.

Protection du cordon d'alimentation • Acheminer les cordons d'alimentation de manière à ce que personne ne risque de marcher dessus et à ce qu'ils ne soient pas écrasés ou pincés par des objets.

Réparation-maintenance • Faire exécuter toutes les interventions de réparation-maintenance par un technicien qualifié. Aucun des éléments internes ne peut être réparé par l'utilisateur. Afin d'éviter tout danger d'électrocution, l'utilisateur ne doit pas essayer de procéder lui-même à ces opérations car l'ouverture ou le retrait des couvercles risquent de l'exposer à de hautes tensions et autres dangers.

Fentes et orifices • Si le boîtier de l'appareil comporte des fentes ou des orifices, ceux-ci servent à empêcher les composants internes sensibles de surchauffer. Ces ouvertures ne doivent jamais être bloquées par des objets.

Lithium Batterie • Il a danger d'explosion s'll y a remplacment incorrect de la batterie. Remplacer uniquement avec une batterie du meme type ou d'un ype equivalent recommande par le constructeur. Mettre au reut les batteries usagees conformement aux instructions du fabricant.

Vorsicht

Stromquellen • Dieses Gerät sollte nur über die auf dem Produkt angegebene Stromquelle betrieben werden. Dieses Gerät wurde für eine Verwendung mit einer Hauptstromleitung mit einem geerdeten (neutralen) Leiter konzipiert. Der dritte Kontakt ist für einen Erdanschluß, und stellt eine Sicherheitsfunktion dar. Diese sollte nicht umgangen oder außer Betrieb gesetzt werden.

Stromunterbrechung • Um das Gerät auf sichere Weise vom Netz zu trennen, sollten Sie alle Netzkabel aus der Rückseite des Gerätes, aus der externen Stomversorgung (falls dies möglich ist) oder aus der Wandsteckdose ziehen.

Schutz des Netzkabels • Netzkabel sollten stets so verlegt werden, daß sie nicht im Weg liegen und niemand darauf treten kann oder Objekte darauf- oder unmittelbar dagegengestellt werden können.

Wartung • Alle Wartungsmaßnahmen sollten nur von qualifiziertem Servicepersonal durchgeführt werden. Die internen Komponenten des Gerätes sind wartungsfrei. Zur Vermeidung eines elektrischen Schocks versuchen Sie in keinem Fall, dieses Gerät selbst öffnen, da beim Entfernen der Abdeckungen die Gefahr eines elektrischen Schlags und/oder andere Gefahren bestehen.

Schlitze und Öffnungen • Wenn das Gerät Schlitze oder Löcher im Gehäuse aufweist, dienen diese zur Vermeidung einer Überhitzung der empfindlichen Teile im Inneren. Diese Öffnungen dürfen niemals von anderen Objekten blockiert werden.

Litium-Batterie • Explosionsgefahr, falls die Batterie nicht richtig ersetzt wird. Ersetzen Sie verbrauchte Batterien nur durch den gleichen oder einen vergleichbaren Batterietyp, der auch vom Hersteller empfohlen wird. Entsorgen Sie verbrauchte Batterien bitte gemäß den Herstelleranweisungen.

Advertencia

Alimentación eléctrica • Este equipo debe conectarse únicamente a la fuente/tipo de alimentación eléctrica indicada en el mismo. La alimentación eléctrica de este equipo debe provenir de un sistema de distribución general con conductor neutro a tierra. La tercera pata (puesta a tierra) es una medida de seguridad, no puentearia ni eliminaria.

Desconexión de alimentación eléctrica • Para desconectar con seguridad la acometida de alimentación eléctrica al equipo, desenchufar todos los cables de alimentación en el panel trasero del equipo, o desenchufar el módulo de alimentación (si fuera independiente), o desenchufar el cable del receptáculo de la pared.

Protección del cables de alimentación • Los cables de alimentación eléctrica se deben instalar en lugares donde no sean pisados ni apretados por objetos que se puedan apoyar sobre ellos.

Reparaciones/mantenimiento • Solicitar siempre los servicios técnicos de personal calificado. En el interior no hay partes a las que el usuario deba acceder. Para evitar riesgo de electrocución, no intentar personalmente la reparación/mantenimiento de este equipo, ya que al abrir o extraer las tapas puede quedar expuesto a voltajes peligrosos u otros riesgos.

Ranuras y aberturas • Si el equipo posee ranuras o orificios en su caja/alojamiento, es para evitar el sobrecalientamiento de componentes internos sensibles. Estas aberturas nunca se deben obstruir con otros objetos.

Batería de litio • Existe riesgo de explosión si esta batería se coloca en la posición incorrecta. Cambiar esta batería únicamente con el mismo tipo (o su equivalente) recomendado por el fabricante. Desachar las baterías usadas siguiendo las instrucciones del fabricante.

FCC Class A Notice

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to ensure compliance.

Extron's Warranty

Extron Electronics warrants this product against defects in materials and workmanship for a period of three years from the date of purchase. In the event of malfunction during the warranty period attributable directly to faulty workmanship and/or materials, Extron Electronics will, at its option, repair or replace said products or components, to whatever extent it shall deem necessary to restore said product to proper operating condition, provided that it is returned within the warranty period, with proof of purchase and description of malfunction to:

USA, Canada, South America, and Central America:

Extron Electronics
1001 East Ball Road
Anaheim, CA 92805, USA

Europe, Africa, and the Middle East:

Extron Electronics, Europe
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The Netherlands

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PM Industrial Bldg.
Singapore 368363

Japan:
Extron Electronics, Japan
Kyodo Building
16 Ichibancho
Chiyoda-ku, Tokyo 102-0082
Japan

This Limited Warranty does not apply if the fault has been caused by misuse, improper handling care, electrical or mechanical abuse, abnormal operating conditions or non-Extron authorized modification to the product.

If it has been determined that the product is defective, please call Extron and ask for an Applications Engineer at (714) 491-1500 (USA), 31.33.453.4040 (Europe), 65.6383.4400 (Asia), or 81.3.3511.7655 (Japan) to receive an RA# (Return Authorization number). This will begin the repair process as quickly as possible.

Units must be returned insured, with shipping charges prepaid. If not insured, you assume the risk of loss or damage during shipment. Returned units must include the serial number and a description of the problem, as well as the name of the person to contact in case there are any questions.

Extron Electronics makes no further warranties either expressed or implied with respect to the product and its quality, performance, merchantability, or fitness for any particular use. In no event will Extron Electronics be liable for direct, indirect, or consequential damages resulting from any defect in this product even if Extron Electronics has been advised of such damage.

Please note that laws vary from state to state and country to country, and that some provisions of this warranty may not apply to you.

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安全须知 • 中文

这个符号提示用户该设备用户手册中的操作和维护说明。

这个符号警告用户该设备机壳内暴露的危险电压，有触电危险.

注意

阅读说明书 • 用户使用该设备前必须阅读并理解有安全和使用说明。

保存说明书 • 用户应保存安全说明书以备将来使用。

遵守警告 • 用户应遵守产品和用户指南上的所有安全和操作说明。

避免追加 • 不要使用该产品厂商没有推荐的工具或追加设备，以避免危险。

警告

电源 • 该设备只能使用产品上标明的电源。 设备必用有地线供电系统供电。第三条线（地线）是安设施，不能不用或跳过。

拔掉电源 • 为安全地从设备拔掉电源，请拔掉所有备后或桌面电源的电源线，或任何接到市电系统电源线。

电源线保护 • 妥善布线， 避免被踩踏，或重物挤压。

维护 • 所有维修必须由认证的维修人员进行。 设备部没有用户可以更换的零件。为避免出现触电危不要自己试图打开设备盖子维修该设备。

通风孔 • 有些设备机壳上有通风槽或孔，它们是用防止机内敏感元件过热。不要用任何东西挡住通风孔。

锂电池 • 不正确的更换电池会有爆炸的危险。必须使与厂家推荐的相同或相近型号的电池。按照生产厂的议处理废弃电池。

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1 Chapter One

Introduction

About This Manual

About the AVT 100 Tuner

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About This Manual

This manual provides information on the Extron AVT 100 audio/video tuner, and discusses how to install and operate it.

About the AVT 100 Tuner

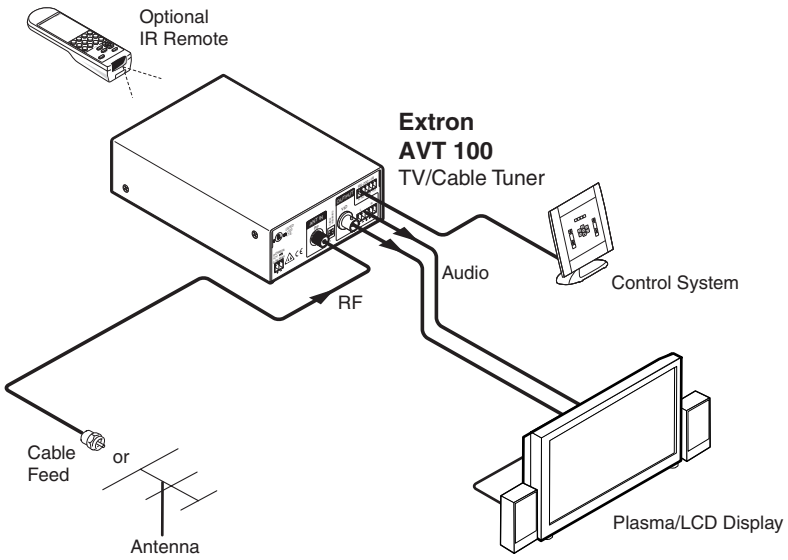
The Extron AVT 100 is an audio/video tuner that provides cable and television tuning for integration into professional A/V environments. The TV band provides reception of over-the-air TV (antenna) and CATV (cable) channels. Channels 2 through 125 are available in the United States and other countries that use the NTSC standard. Channels 48 through 855 are available in countries in which the PAL standard is used.

The AVT 100 may receive signals from a cable input or TV antenna. It is controllable from the front panel or through software via the RS-232 port.

The AVT 100 also provides wired IR for extended range infrared (IR) operation. The optional AVT 100 IR Remote Control and the Extron IR Link are available separately to be used in conjunction with this feature.

Application diagram

The following application diagram gives an example of how the various supported devices can be connected to the AVT 100. Use it as a guide for all AVT 100 connections.



AVT 100 application example

Models

Two models of the AVT 100 are available:

AVT 100N (NTSC version) — Handles NTSC signals only. This version is used in the U. S. and some other countries.

AVT 100P (PAL version) — Handles PAL signals only. This version is used in Great Britain and other nations that use the PAL standard.

These two models have different radio frequency (antenna) connectors, but in all other functionality, they are identical.

Features

Antenna (TV) and cable channels — A full range of antenna (TV) and cable channels are available.

AVT 100 N (NTSC):
Antenna: 2-69
Cable: 2-125

AVT 100P (PAL):
Antenna and cable: 48-855

RS-232 interface — Enables you to enter Simple Instruction Set (SIS™) commands and interact with the Windows®-based control software. The optional IR Link is also connected to this port.

IR Remote Control — Enables control of the AVT 100 via a hand-held remote control device that sends infrared signals to the tuner from a distance of up to 30 feet. Communication is provided through an infrared receiver and hard wiring. Extron's IR Link is an option, available separately.

Balanced and unbalanced audio output — Enables you to use a wide variety of output devices without the need for conversion.

Savable configuration files — Lets you save the system configuration as a file. The saved configuration can subsequently be reloaded to the AVT 100 to restore all settings at once.

Power supply — An external desktop 12 VDC power supply connects to the back panel of the unit via a two-pin captive screw connector, and accepts 100 to 240 VAC.

Enclosure — Compact 1U, quarter-rack enclosure, 6.7 inches in depth.

Cable/antenna (TV) DIP switch — Enables switching between cable and antenna modes.

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99 presets — Presets can be associated with channels using SIS programming, the IR Remote control, or the AVT Windows-based control software. The AVT provides 99 programmable channel presets for TV and 99 for cable.

Stored presets can be used to recall the corresponding cable or antenna channel in preset mode. With SIS commands, presets can be recalled in tune mode as well as preset mode.

Audio and video muting — Enables the audio and video outputs to be individually muted through the appropriate SIS command, the IR Remote, or the Windows-based control software.

Mono audio — Can be selected by SIS commands or the Windows-based control software. When Mono is disabled (the factory default), stereo reception is enabled.

Front panel security lockout (executive mode) — Locks out users from all front panel functions. Executive mode can be enabled via SIS commands or the Windows-based control software.

IR Remote access On/Off — Locks out users from controlling the AVT 100 through the IR Remote control. This access can be turned on and off via SIS commands or the Windows-based control software.

Rack mountability — The AVT 100 can be mounted on a rack shelf, using the optional mounting accessories. It can also be placed on a tabletop, for which four self-adhesive feet are provided.

PAL standard selection — Lets you select the appropriate PAL broadcasting standard for your area.

CATV frequency selection (NTSC only) — Lets you select the NTSC cable frequency used by your cable provider.

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Chapter Two

Installation and connection

Mounting the AVT 100

Rear Panel Features

Wiring and Connecting the RS-232 Cable

Connecting the AVT 100 to the IR Link

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Mounting the AVT 100

The AVT 100 tuner can be set on a table or mounted on a rack shelf.

Tabletop use

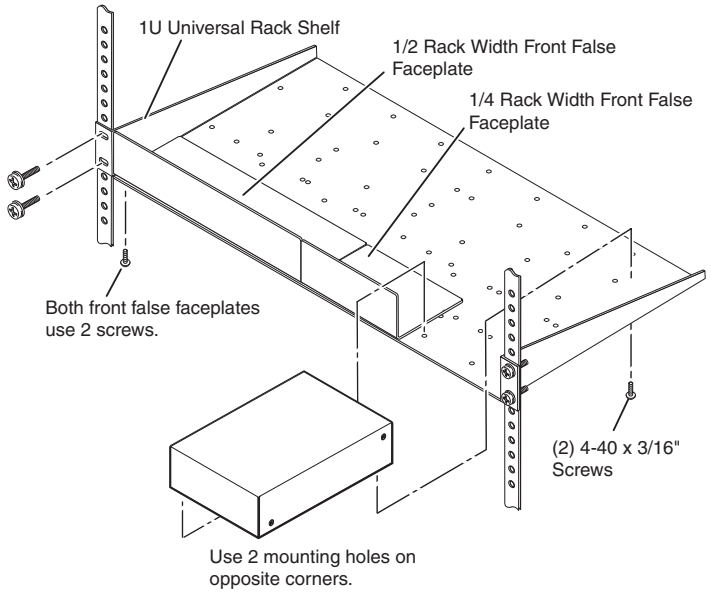
Four self-adhesive rubber feet are included with the AVT 100. For tabletop use, attach one foot at each corner on the bottom surface of the unit, and place the unit in the desired location.

Rack mounting

For optional rack mounting, do not install the rubber feet. Mount the tuner on an RSU 129 Universal Rack Shelf Kit (part #**60-190-01**) or an RSB 129 Basic Rack Shelf Kit (part #**60-604-01**).

To rack mount the AVT 100:

1. If feet were previously installed on the bottom of the AVT 100, remove them.

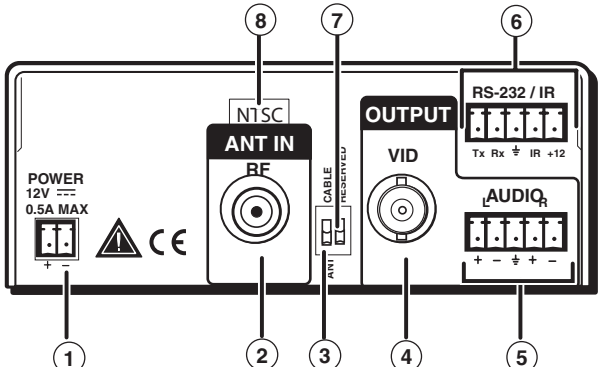

1U Universal Rack Shelf
1/2 Rack Width Front False Faceplate
1/4 Rack Width Front False Faceplate
Both front false faceplates use 2 screws.
(2) 4-40 x 3/16" Screws
Use 2 mounting holes on opposite corners.

Mounting the AVT 100 on a standard rack shelf

2. Mount the AVT 100 on the rack shelf, using two 4-40 by 3/16" screws in opposite (diagonal) corners to secure the unit to the shelf.
3. Install blank panels or other units in the remaining space on the rack shelf.

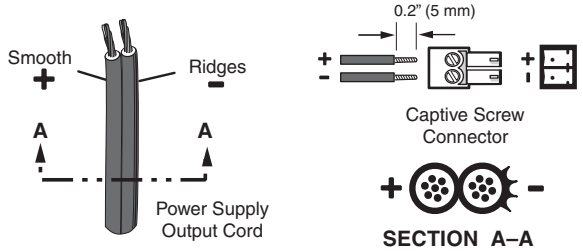
Rear Panel Features

The following figure shows the switches and connectors on the rear panel of the AVT 100.



AVT 100 rear panel

(1) **Power connector —** Plug the external 12 VDC power supply into this 2-pin, 3.5 mm captive screw connector. The power supply is included with the unit. The following figure shows how to wire the connector.



Power connector wiring

CAUTION *The length of the exposed (stripped) copper wires is important.* ***The ideal length is 0.2" (5 mm).*** *Longer bare wires can short together. Shorter wires are not as secure in the captive screw connectors and could be pulled out.*

CAUTION *Do not tin the stripped power supply leads before installing the captive screw connector. Tinned wires are not as secure in the captive screw connectors and could be pulled out.*

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WARNING *Keep the two power cord wires separate while plugging in the power supply. Remove power before wiring.*

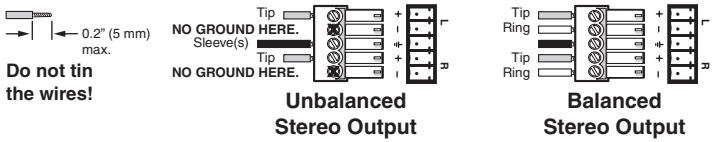
To verify the polarity before connection, plug in the power supply with no load and check the output with a voltmeter.

(2) **Radio frequency (RF) connector** — Plug an antenna or CATV cable into the 75-ohm F type female coaxial connector (for NTSC), or into the 75-ohm female IEC 169-2 connector (for PAL).

(3) **Cable/antenna switch** — Use this DIP switch to select between cable (CATV) and antenna (TV) modes. Presets and NTSC Auto-Scan channels are saved separately for antenna and CATV.

(4) **Composite video output connector** — Plug a television or other A/V output device into this female BNC connector.

(5) **Audio connector** — Plug an audio device into this 5-pole captive screw connector. Balanced or unbalanced audio is output on this connector.



Wiring the audio output connector

CAUTION *Connect the sleeve to ground (Gnd). Connecting the sleeve to a negative (-) terminal will damage the audio output circuits.*

(6) **RS-232/IR connector** — Use this five-pole connector for an RS-232 connection to a PC for entering SIS commands and using the Windows-based control software, and/or for connecting the wired IR Link. See *Wiring and Connecting the RS-232 Cable*, on the next page, for information on connecting to this port.

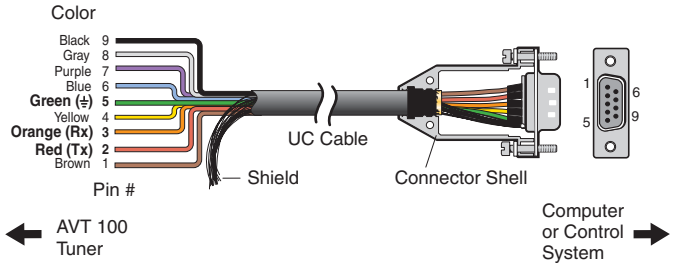
(7) **Reserved switch** — This is an extra DIP switch that is not used.

(8) **Version label** — Indicates the version, PAL or NTSC, of the AVT 100.

Wiring and Connecting the RS-232 Cable

To connect your PC or control system to the RS-232 connector, you can use a male 9-pin, D-to-bare-wire RS-232 cable or a universal control cable (UC 50', UC 100', or UC 200'). One end of the UC cable is terminated with a female 9-pin, D connector, and the other end is unterminated. You will wire this end to the provided five-pin captive screw plug.

The following diagram shows the UC cable's pin assignments.



UC cable pin assignment color codes

1. Wire the RS-232 cable to the five-pin captive screw connector, provided with the AVT 100, as described below (see the illustration on page 2-6). You will connect only the red, orange, and green wires in the cable; and you will use only the first three pins on the connector, starting at the left.
   - **a**. Connect the red wire to the first pin on the left, which plugs into the Tx (Transmit) port.
   - **b**. Connect the orange wire to the second pin, which plugs into the Rx (Receive) port.
   - **c**. Connect the green wire to the third pin, which plugs into the ground port, marked with this symbol: ⏚
2. Plug the five-pin connector into the RS-232/IR receptacle on the AVT 100 rear panel.

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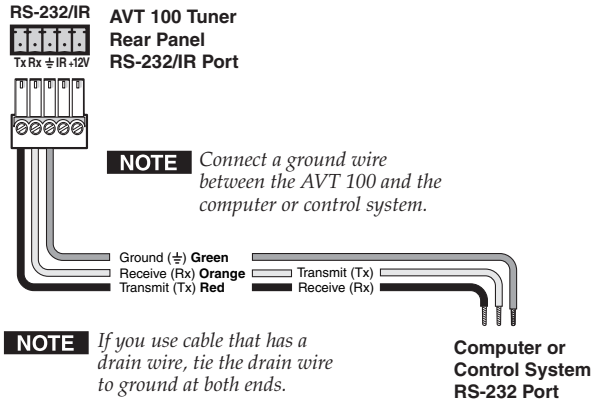
The following diagram shows how to connect your PC or control system to the RS-232/IR port.


RS-232/IR
Tx Rx ⏚ IR +12V
AVT 100 Tuner
Rear Panel
RS-232/IR Port
NOTE
Connect a ground wire between the AVT 100 and the computer or control system.
Ground (⏚) Green
Receive (Rx) Orange
Transmit (Tx) Red
Transmit (Tx)
Receive (Rx)
NOTE
If you use cable that has a drain wire, tie the drain wire to ground at both ends.
Computer or Control System RS-232 Port

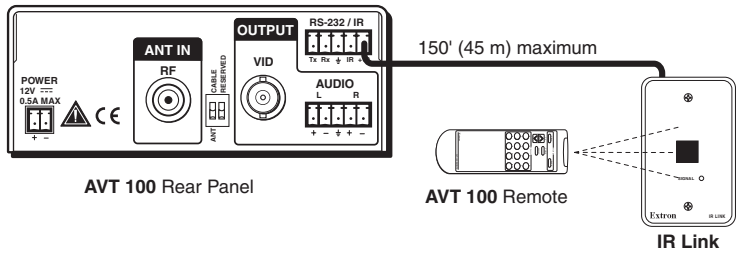
Wiring the AVT 100 to a PC or control station through the RS-232/IR port

Connecting the AVT 100 to the IR Link

The optional IR Link Infrared Signal Repeater can be connected directly to an AVT 100. To wire the IR Link for use with your AVT 100, follow these steps:

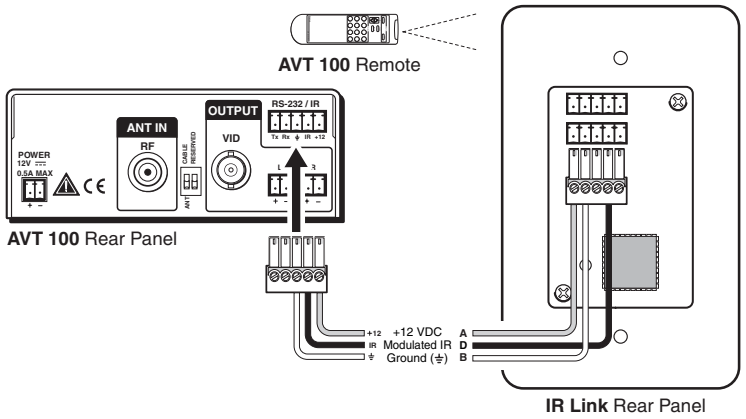
1. Prepare the site and install a wall box, following the directions in the *IR Link User's Manual*, provided with your IR Link equipment.
2. Cut a length of 150' (45 m) or less of Extron Comm-Link cable to go between the AVT 100 and the IR Link.
3. Attach a 3.5 mm, 5-pole captive screw connector to each end of the cable. Only three wires (between pins A, B, and D on the IR Link end, and pins Ground, IR, and +12 on the AVT 100 end) are required. Wire the cable as shown in the illustration on the next page. Connectors are included with the IR Link, but the cable must be purchased separately.
4. Plug the 5-pole connector into one of the IR Link's communications connectors.
5. Plug the other end of the cable into the RS-232/IR port on the rear panel of the AVT 100.

CAUTION *Do not connect more than one IR Link (either in parallel or in series) to a tuner.*



Using the AVT 100 IR Remote with the IR Link

The following diagram shows how to wire the AVT 100 to use the infrared remote control with the optional IR Link.



Wiring the IR Link to the AVT 100

NOTE *The ground pin is shared between RS-232 control and the IR Link connection.*

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Chapter Three

Operation

Front Panel Features

Using the Control Buttons

Special Functions

Using the IR Remote for AVT 100

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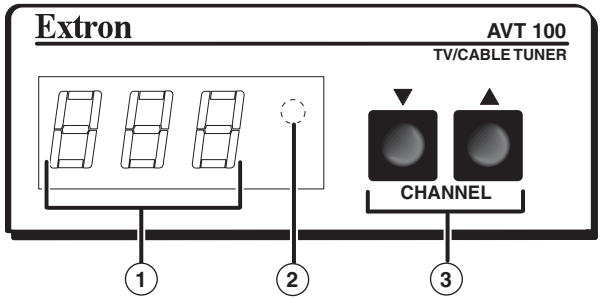
Front Panel Features

The NTSC and the PAL versions of the AVT 100 have the same front panel with identical components and appearance. The following features and functions are available on the AVT 100 front panel.



AVT 100 front panel

1. **Digital display** — This 3-digit, 7-segment alphanumeric LED display indicates the antenna TV or CATV channel being received (in Tune mode) or the selected channel preset (in Preset mode).
2. **IR receiver** (not visible from the exterior of the unit) — This sensor receives commands via infrared signals from the optional AVT 100 IR Remote Control.
3. **Up and Down control buttons** — These push-buttons are used to increment or decrement the channel or preset number. You can also activate Auto-Scan by pressing and holding both of these buttons simultaneously for 2 seconds (see *Initiating Auto-Scan*, later in this section).

Using the Control buttons

Changing the channel

If the AVT 100 is in Tune mode (factory default):

- Press the up or down Channel button to tune to the desired channel. The current channel number is displayed in the 3-digit LED display.
- Press and hold down one of the Channel buttons to change the channels rapidly until the button is released. When the highest channel number available is reached, the display rolls over and restarts numbering.

If the AVT 100 is in Preset mode (available only by SIS command, the Windows-based control software, or the IR Remote), you can change only to a preset channel. To change the preset, press the Channel buttons to display the numbers of the programmed presets in incremental or decremental order.

Initiating Auto-Scan

When Auto-Scan is enabled, the AVT 100 scans all channels and saves to memory those with an active signal.

To initiate automatic scanning, press and hold both Channel buttons. After about 2 seconds, the AVT 100 scans through the channels and saves them to memory.

Adding and deleting channels

Auto-Scanned channels can be added to or removed from memory individually by using SIS commands or the Windows-based control software. (See chapter 4, *Software Configuration and Control*, for further information.)

Special Functions

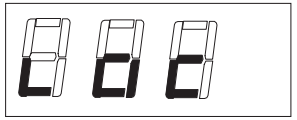
The AVT 100 offers some special functions that are accessible only by using SIS commands, the IR Remote, and the Windows-based control software. Refer to chapter 4, *Software Configuration and Control*, or the AVT 100 Help for the commands to enable these functions.

Locking front panel controls (executive mode)

Executive mode disables all front panel controls, locking out the user from those functions. Putting the AVT 100 in this mode enhances security by protecting against inappropriate or accidental changes to settings.

When the AVT 100 is in executive mode, all serial port commands remain enabled.

When executive mode is enabled, the AVT 100 displays the following message on the digital display for 2 seconds:



Any attempt to use the front panel buttons while the AVT 100 is in Executive mode causes the LOC (Locked) message to flash.

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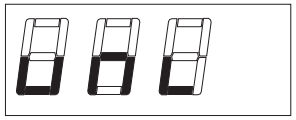
When Executive mode is disabled, the AVT 100 displays the UNL (Unlocked) message:



Locking IR Remote access

The AVT 100 Remote Control can be set to lock out users from using it to control the AVT 100. This remote access can be turned on and off via SIS commands or the Windows-based control software. When remote access is set to Off, all AVT 100 controls remain available through other means (SIS commands, Windows-based control software, and the front panel).

Selecting Tune or Preset mode

Two channel selection modes are available: **tune** and **preset**. You can use the Windows-based control software, SIS commands, or the IR Remote to switch between these modes.

- In **tune mode**, the Channel up and down buttons increment and decrement by one channel with each press of the button. If a button is held down for 2 seconds, the channels tune rapidly up or down until the button is released. Tune mode is the factory default.
- In **preset mode**, the Channel buttons step up or down through presets that have been associated with channels via SIS commands, the IR Remote, or the Windows-based control software.

NOTE *Presets can be recalled via SIS commands, the Windows-based control software, or the AVT Remote in both Tune mode and Preset mode.*

Presets

The AVT 100 provides 198 programmable presets—99 for antenna (TV) and 99 for CATV (cable). Presets are associated with channels by SIS programming (see chapter 4, *Software Configuration and Control)*, the IR Remote (see *Using the IR Remote for AVT 100*, later in this chapter), or via the Windows-based control software (see the software's Help).

Channel presets that are programmed while the tuner is in either antenna or CATV mode remain exclusive to the mode in which they were saved. The following table shows the ranges of channel numbers that may be preset.

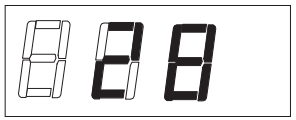
	NTSC		PAL
DIP switch	**Antenna**	**Cable**	**Antenna and Cable**
Channel #	2 to 69	2 to 125	48 to 855

Channels available for presetting

When the AVT 100 is in tune mode and a preset is recalled via the appropriate SIS command, the IR Remote, or the Windows-based control software, a stored preset recalls the CATV or antenna TV channel that was programmed for it. When you select a preset in either tune or preset mode, its preset number is displayed for 2 seconds. Then the display changes to the channel number associated with the selected preset.

Example: If preset 30 is selected via the Channel buttons in Preset mode, the digital display shows the following:

After 2 seconds, the digital display shows the channel number (28 in this example) associated with preset number 30.



To overwrite a preset and change its channel, enter the SIS command or the Windows-based control software selection, or press the appropriate buttons on the IR Remote to save a different channel to that preset number. See chapter 4, *Software Configuration and Control*, for information on programming the presets using SIS commands.

Muting the audio and video outputs

Audio and video outputs can be individually muted through the appropriate SIS command, the IR Remote control, or the Windows-based control software. (Refer to chapter 4, *Software Configuration and Control*, or the AVT 100 Help for further information.)

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Selecting the audio output mode

You can select the audio output mode (mono or stereo) using SIS commands or the Windows-based control software. (Mono is the factory default.)

On PAL models, the following audio selections are available if a dual channel is detected:

L-L: Select the left audio channel as output.

R-R: Select the right audio channel for output.

L-R: Select the left input channel for left output and the right input channel for right output.

R-L: Select the right input channel for left output and the left input channel for right output.

(See chapter 4, *Software Configuration and Control*, for information on the SIS commands for audio mode selection. To switch audio output modes using the Windows-based control software, refer to the Help.)

Selecting the PAL broadcasting standard

There are several different PAL broadcasting standards. You can select the appropriate standard using SIS commands (see chapter 4, *Software Configuration and Control*) or the Windows-based control software (see the software program's Help).

Selecting the cable TV frequency (NTSC only)

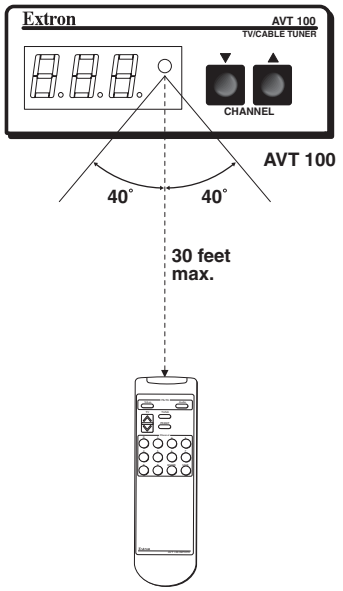
You can select the CATV frequency (Standard, IRC, or HRC) so that your AVT 100 is compatible with the frequency used by your cable provider. You can select the frequency using SIS commands (see chapter 4, *Software Configuration and Control*) or the Windows-based control software (see the software program's Help).

Using the IR Remote for AVT 100

The optional hand-held AVT 100 IR Remote Control lets you remotely perform many of the functions that are also available through the front panel buttons, SIS commands, and/or the Windows-based control software. The tuner responds to commands from the AVT 100 Remote as if the corresponding button were pressed on the front panel, or the corresponding SIS command or Windows-based control software selection were entered.

From a distance of no more than 30 feet, the remote control sends infrared (IR) signals to the AVT 100 through the tuner's front panel. The IR receiver is located to the right of the channel display, but is not visible from in front of the AVT 100.

The infrared remote receiver can receive the signal if it is sent from within a 40-degree arc to the right or left of direct line of sight between the remote and the AVT 100 receiver. (See the diagram below.)

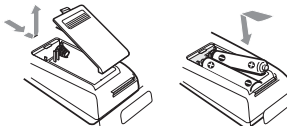


Area for remote signal reception

NOTE *The AVT 100 must be plugged in before you operate the remote control. Setup operations cannot be performed from the remote.*

Installing batteries in the IR Remote

Install two AAA batteries in the AVT 100 IR Remote control as shown below.



Installing batteries in the AVT 100 IR Remote

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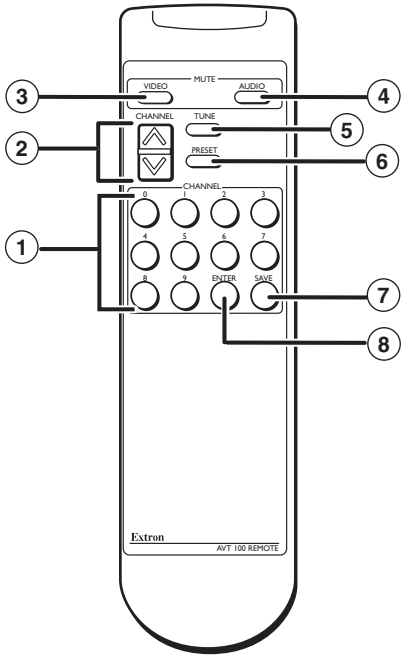
Buttons on the AVT 100 IR Remote

The following functions are available through the buttons on the IR Remote for AVT 100.



Buttons on the AVT 100 remote control

(1) **Channel Selection (0 through 9)** — In tune mode, press these number buttons to specify a channel number, then press Enter to select it.

In preset mode, pressing these buttons also selects the channel whose number(s) you pressed. The buttons do not select preset numbers.

(2) **Channel Up/Down** — Press the up and down arrows on this rocker button to increment and decrement the channel or preset number.

In tune mode, pressing either part of this button displays the adjacent channel number. If an Auto-Scan has been performed, pressing the Channel button causes the display to cycle between the channels that were set by the scan for the mode (TV or cable) in which the scan was done. (In this case, the adjacent channel may not be available for display.)

In Preset mode, the next or previous preset channel is displayed, depending on which part of the button you pressed. The AVT 100 briefly displays the preset number preceded by a P, then it displays the channel number associated with that preset.

If no presets have been defined when the Channel button is pressed, the display shows P00, then the channel number to which the AVT 100 was set before entering preset mode.

NOTE *The Channel Up/Down button applies to Antenna (TV) and Cable modes. Use the DIP switch on the rear panel to change between Antenna and Cable modes.*

(3) **Video Mute** — Press this button to toggle video muting on and off. When muting is on, video output is mute.

(4) **Audio Mute** — Press this button to toggle audio muting on and off. When muting is on, audio output is mute.

(5) **Tune** — Press this button to switch to tune mode. In tune mode, the Channel buttons switch between channel numbers.

(6) **Preset** — Press this button to switch to preset mode. In preset mode, the Channel buttons switch between preset channels.

(7) **Save** — After keying in a preset number, press this button to save the currently selected channel as a preset.

(8) **Enter** — After keying in a channel number, press this button to switch to that channel.

Selecting a channel (tuning) using the IR Remote

To select or change a channel using the AVT 100 IR Remote, follow these steps:

1. Using the IR Remote channel selection number buttons in the same way you would use the number keys on a calculator, enter the number of the desired channel.

   Example: To change to channel 105, press the buttons numbered 1, then 0, then 5.

2. Press the Enter button to activate the channel change. If the number you entered is a valid channel, the AVT 100 switches to it, and the number remains displayed on the AVT 100 front panel.

   If you enter an invalid (out of range) channel number, after 3 seconds the front panel display returns to the channel number that was displayed previously, and does not change the channel.

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Saving a preset using the IR Remote

To assign a channel number to one of the 198 available presets, follow these steps:

1. Switch to the channel that you want to assign. (See *Selecting a channel (tuning) using the IR Remote*, on the previous page.)
2. Enter the preset number to which you want to assign the current channel.
3. Press Save. The AVT 100 saves the preset, and displays P and the preset number as confirmation. After 3 seconds, the display returns to the channel number that you just saved.

NOTE *If an invalid preset number is entered, no preset is saved.*

Chapter Four

Software Configuration and Control

Using Simple Instruction Set (SIS™) Commands

Windows®-Based Control Software

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The AVT 100 tuner can be remotely set up and controlled via a host computer or other device (such as a control system), attached to the rear panel RS-232 port. The control device (host) can use the Extron Simple Instruction Set (SIS™) commands or the Windows-based control software. See chapter 2 for information on connections.

Using Simple Instruction Set (SIS™) Commands

Host-to-AVT communications

SIS commands consist of one or more characters per field. No special characters are required to begin or end a command sequence. When the AVT 100 determines that a command is valid, it executes the command and sends a response to the host device.

Most responses from the tuner to the host end with a carriage return and a line feed (CR/LF = ↵), which signals the end of the response character string. A string is one or more characters.

AVT 100-initiated messages

When a local event such as a front panel selection takes place, the AVT 100 responds by sending a message to the host, indicating what selection was entered. No response is required from the host. One of the following AVT 100-initiated messages is displayed, depending on your version.

NOTE *These messages are displayed only at power-up.*

NOTE *For the* X4 *and* X1 *values shown below, see* Symbol definitions *on page 4-4.*

NTSC version:

(C) Copyright 2005, Extron Electronics, AVT 100 – NTSC Version, Vx.xx ↵

Dip X4 ↵
TVC X1 ↵

PAL version:

(C) Copyright 2005, Extron Electronics, AVT 100 – PAL Version, Vx.xx ↵

Dip X4 ↵
TVC X1 ↵

The AVT 100 sends the copyright message when it first powers on. Vx.xx is the firmware version number.

Error responses

If the AVT 100 is unable to execute a command it receives, because the command is invalid or contains invalid parameters, the tuner returns an error response to the host. Error response codes and their descriptions are as follows:

E01 – Invalid input channel number (out of range)
E10 – Invalid command
E11 – Invalid preset
E13 – Invalid value (out of range)

Using the command/response tables

The command/response tables on the following pages list valid command ASCII and hexadecimal codes, the AVT 100's responses to the host, and a description of the command's function or the results of executing the command.

The ASCII to HEX conversion table below is for use with the command/response tables.

ASCII to HEX Conversion Table																				Esc	1B	CR	ØD	LF	ØA
	2Ø	!	21	"	22	#	23	$	24	%	25	&	26	'	27										
(	28	)	29	*	2A	+	2B	,	2C	-	2D	.	2E	/	2F										
Ø	3Ø	1	31	2	32	3	33	4	34	5	35	6	36	7	37										
8	38	9	39	:	3A	;	3B	<	3C	=	3D	>	3E	?	3F										
@	4Ø	A	41	B	42	C	43	D	44	E	45	F	46	G	47										
H	48	I	49	J	4A	K	4B	L	4C	M	4D	N	4E	O	4F										
P	5Ø	Q	51	R	52	S	53	T	54	U	55	V	56	W	57										
X	58	Y	59	Z	5A	[	5B	\	5C	]	5D	^	5E	_	5F										
`	6Ø	a	61	b	62	c	63	d	64	e	65	f	66	g	67										
h	68	i	69	j	6A	k	6B	l	6C	m	6D	n	6E	o	6F										
p	7Ø	q	71	r	72	s	73	t	74	u	75	v	76	w	77										
x	78	y	79	z	7A	{	7B	l	7C	}	7D	~	7E	DEL	7F										

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Symbol definitions

↵ = CR/LF (carriage return/line feed) (hex 0D 0A)

← = Soft carriage return (no line feed)

● = Space

Esc = Escape key

X1 = Channel number
NTSC antenna: 002 – 069
NTSC cable: 002 – 125
PAL antenna and cable: 48 – 855

X2 = Muting/Executive mode
0 = Off
1 = On

X3 = Presets 1 – 99 (The preset number cannot be more than two digits.)

X4 = Antenna or cable DIP switch setting
0 = Antenna (TV)
1 = CATV (cable)

X5 = PAL standard selection
0 = B/G (default)
1 = D/K
2 = I

X6 = Part number

X7 = Audio adjustment level: -63 through +12

X8 = Gain level: 0 –12

X9 = Attenuation level: 0 – 63

NOTE *If a command is **not** case-sensitive, this is indicated by showing the command letter in uppercase, followed by a slash (/), then the same letter in lowercase.*

Examples: B/b, Z/z

Command/response table for SIS commands

Command	ASCII (host to tuner)	Response (tuner to host)	Additional information
Memory preset			
Save preset (active channel)	X3 ,	Spr X3 ↵	X3 = Presets 01-99.
Recall preset	X3 .	Rpr X3 chn X1↵	
Save preset (user-specified channel)	X1 * X3 ,	pre X3 chn X1 ↵	X1 **channel values:** NTSC antenna: 002-069 NTSC CATV: 002-125 PAL antenna (TV) and CATV: 048-855
View all presets	Esc . ←	pre01chnxxx↵ through pre99chnxxx↵	
Video mute			
Mute on	1B/b	Vmt X2 ↵	Mutes video output. For X2: 0 = off; 1 = on
Mute off	0B/b	Vmt X2 ↵	Unmutes video output.
View video mute status	B/b	Vmt X2 ↵	Shows muting status.
Audio mute			
Mute on	1Z/z	Amt X2 ↵	Mutes audio output.
Mute off	0Z/z	Amt X2 ↵	Unmutes audio output.
View the audio mute status	Z/z	Amt X2 ↵	Shows muting status

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Command/response table for SIS commands (continued)

Command	ASCII (host to tuner)	Response (tuner to host)	Additional information
PAL standard selection (PAL version only)			
Select standard	X5 S/s	Sys X5 ↵	Select PAL standard X5 values are: 0 = B/G (default) 1 = D/K 2 = I
View status	S/s	Sys X5 ↵	Show the current PAL standard.
Request information			
Request channel number	I/i	TVC X1 ↵	X1 = channel number
Audio gain and attenuation (NTSC model only)			
Set specific gain	X8 G	Aud X7 ↵	Set the gain to X7 dB. Range for gain is 0 to +12.
Set specific attenuation	X9 g	Aud X7 ↵	Set the attenuation to X7 dB. Range for attenuation is 0 to +63.
Incrementgain or attenuation	+G/g	Aud X7↵	Set audio level to X7 dB by increasing gain or attenuation. Default audio level is 0dB.
Decrement gain or attenuation	– G/g	Aud X7 ↵	Set audio level to X7 dB bydecreasing gain or attenuation.
View gain or attenuation	G/g	X7 ↵	View current audio level in dB.

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Command/response table for SIS commands (continued)

Command	ASCII (host to tuner)	Response (tuner to host)	Additional information
Executive mode			
Disable	0X/x	Exe0↵	Enables control via the front panel by disabling executive mode.
Enable	1X/x	Exe1↵	Locks out control from the front panel.
View Status	X/x	Exe X2	Shows whether executive mode is on or off.
Query firmware version			
Query firmware version	Q/q	x.xx↵	Shows current firmware version. **x.xx** is the format of the version number.
Request Part Number			
Request AVT 100 part number	N/n	X6 ↵	X6 values: NTSC = 60-647-01 PAL = 60-647-02
Reset to default settings (Zap command)			
Zap settings/memories	Esc zXXX←	ZapXXX↵	The default settings are: **Tune mode** **All presets removed** **Auto-Scan channels cleared**

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Command/response table for special function SIS commands

The syntax for initiating a special function is:

[X!] * __ #

where __ is the function number and [X!] is the value.

To view a function's setting, use:

__#

where __ is the function number.

In the following special functions command table, the values of the [X!] variable are different for each command/function. These values are given in the far right column.

Command/response table for special function SIS commands

Command	ASCII command (host to tuner)	Response (tuner to host)	[X!] values and additional descriptions
Preset and Tune modes			
Select mode	[X!] * 1 #	Mod [X!] ↵	0 = Preset 1 = Tune
Example:	1 * 1 #	Mod 1 ↵	Enable Tune Mode
View	1 #	Mod [X!] ↵	
Auto-Scan			
Activate Auto-Scan	2 #	Scn ↵	Same function as holding down both channel buttons on the front panel
Delete Auto-Scan channel	[X!] * 3 #	Del [X!] ↵	[X!] **values for NTSC:** 002-069 (antenna TV channel) 002-125 (CATV channel) [X!] **values for PAL:** 048-855 (antenna and CATV channel) (1, 2, or 3 digits may be entered.)
Example:	011 * 3 #	Del 011 ↵	Delete channel 11.
Add Auto-Scan Channel	[X!] * 4 #	Add [X!] ↵	[X!] **values for NTSC:** 002-069 (TV channel) 002-125 (CATV channel) [X!] **values for PAL:** 048-855 (antenna and CATV channel)
Example:	011 * 4 #	Add 011 ↵	Add channel 11.

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Command/response table for special function SIS commands (continued)

Command	ASCII command (host to tuner)	Response (tuner to host)	X! values and additional descriptions
Presets			
Delete preset	X! * 5 #	Del X! ↵	1-99 presets each for cable and TV
Example:	25 * 5 #	Del 025 ↵	Delete preset 25.
Change channel			
Increment channel	+ 6 #	TVC X1 ↵	**X1 values for NTSC:** 002-069 (TV channel) 002-125 (cable channel) **X1 values for PAL:** 048-855 (antenna and CATV channel)
Decrement channel	- 6 #	TVC X1 ↵	See X1 values for decrementing the channel.
Set TV Channel	X1 * 6 #	TVC X1 ↵	See X1 values for setting the channel.
Example:	056 * 6 #	TVC 056 ↵	Set TV channel to 56.
View	6 #	TVC X1 ↵	
View DIP switch setting			
Antenna/cable selection	8 #	Dip X4 ↵	Shows whether the tuner is set to antenna (TV) or CATV (cable) mode. For X4: 0 = Antenna 1 = Cable
Example:	8 #	Dip1 ↵	DIP switch has been set to cable.

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Command/response table for special function SIS commands (continued)

Command	ASCII command (host to tuner)	Response (tuner to host)	X! values and additional descriptions
Audio configuration			
Audio output mode	X! * 7 #	Mon X! ↵	0 = Stereo 1 = Mono 2 = Select left channel and output as mono.* 3 = Select right channel and output as mono.* 4 = Output same as input (R to R, L to L)* 5 = Output opposite of input (R in to L out, L in to R out)* * This configuration is available only in PAL versions, when Dual Channel is detected.
NOTE	*Audio configuration setup depends on the incoming audio signal. If stereo audio is detected on the current channel, mode 0 (stereo) is seen as the default. If a dual language channel (e.g., English on the left channel and Spanish on the right) is detected on a selected TV/Cable channel, mode 2 (select left channel and output as mono) is the default. The user can overwrite the default setting by setting up audio configuration via SIS command or the Window's-based control software, and the user's setting is saved.*		
Example:	1 * 7 #	Mon 1 ↵	Mono out.
View	7 #	Mon X! ↵	
IR Remote control access on/off			
IR receiver on/off	X! * 9#	Rmt X! ↵	0 = IR enabled (default) 1 = IR disabled
Example:	1*9#	Rmt 1 ↵	Turn IR off.
View	9#	Rmt X! ↵	

Command/response table for special function SIS commands (continued)

Command	ASCII command (host to tuner)	Response (tuner to host)	X! values and additional descriptions
View Auto-Scan channels			
View all channels	0*10#	chn002 ● X! ↵ chn003 ● X! ↵ . . . ↵	List all channels. 1 = Enable 0 = Disabl
View specific channel	X1 *10#	X! ↵	Show a specified channel. For X!: 0 = Off 1 = On X1 = Channel #
CATV frequency selection (NTSC model only)			
Set frequency	X! * 11#	Cbl X!	Set frequency for cable: For X!: 1 = IRC 2 = HRC 3 = Standard (default)
View frequency setting	11#	Cbl X!	

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Advanced Instruction set commands

The advanced instructions use hexadecimal commands that are more complex than the Simple Instruction Set. They are used by the Windows-based control Program and special third party applications.

Command/response table for Advanced Instruction commands

Command	Hex command (host to tuner)	Response (tuner to host)	Additional information
Read/write entire memory (to back up or restore the system)			
Read all memory contents	90 91	xxxx bytes of data + 1 byte checksum	Uploads all channels saved, active channel, presets, mode selection, and audio settings.
Write all memory contents	90 92 + xxxx bytes of data + 1 byte checksum	Dn1 ↵	Downloads all channels saved, the active channel, presets, mode selection, and audio settings.

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Windows®-Based Control Software

In addition to the SIS commands, the AVT 100 Windows-based control software provides you with another means of configuring and controlling the AVT 100 via RS-232.

This control program includes the functions found on the tuner's front panel and the IR Remote control, and some additional features that are available only through the Windows-based software or the SIS commands.

Compatibility

The Windows-based control software is compatible with Windows 98, Windows NT, Windows 2000, and Windows XP.

Installing the software

Extron's AVT 100 Windows-based control software program is provided on a CD with the tuner. You can obtain additional copies of the software at no extra charge and download updates from the Extron Web site at **http://www.extron.com.**

The Windows-based control software program requires a minimum of 2.5 MB (megabytes) of hard disk space.

To use the software that is on the CD, you must install the program on your computer. Follow these steps:

1. Insert the CD ROM into your CD drive. The disk should start automatically. If it does not, double-click LAUNCH.EXE on the CD to start it.
2. On the Software Installation screen, click the AVT 100 Control Software link (outlined in the illustration below).

Software Installation screen on CD

3. On the File Download window that appears, click Run to begin installing the program.

NOTE *If you want to save the installation file (AVT100Setupv2_n.exe) to your desktop, click Save. On the Save As window, save the setup file to the desired location on your computer. When you are ready to install the software, double-click on the AVT100Setupv2_n.exe icon and follow the directions on the screens.*

4. A Security prompt appears. Click Run on this window to continue with the installation.
5. Follow the instructions on the InstallShield Wizard screens to complete the program installation.

   By default the installation creates a folder called "AVT 100" in the following location on the computer:

   c: \Program Files\Extron\AVT 100

   If there is no Extron folder in your Program Files folder, the installation program creates it as well.

Starting the software program

Some items found in the Windows-based control software program correspond directly to the front panel or remote controls. (See chapter 3, *Operations*, for front panel and IR Remote features and settings.) Other features are accessible only through the Windows-based control software or SIS commands (discussed earlier in this chapter). The AVT 100 Help program provides complete information on settings and on how to use the software.

1. To run the program, double-click on the **AVT 100.exe** file icon, shown at right.

   The Extron AVT 100 window appears, with all objects grayed out. The Select COM Port window is displayed in front of it.

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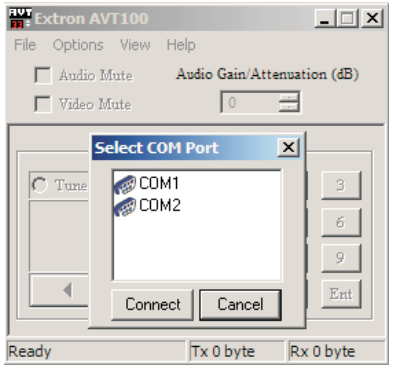
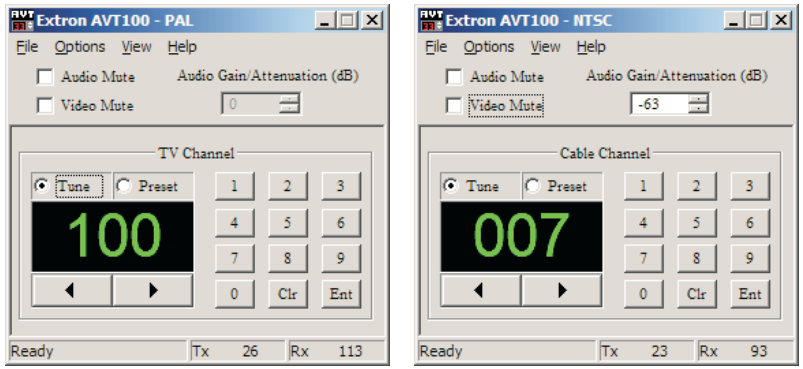


AVT 100 window with Select COM Port window

2. On the Select COM Port window, select the communications port that is connected to the tuner's Config/RS-232 port, then click Connect.

   The currently selected channel number appears in the Channel box, and all menu options (except Connect) become available. The AVT 100 window's title bar indicates your AVT's configuration — NTSC or PAL.



AVT 100 window, connected (PAL and NTSC versions)

You are now ready to configure presets, select channels, and perform the other tasks available from the pull-down menus, check boxes, and the TV/Cable Channel field on the AVT 100 window.

NOTE *The TV/Cable Channel field is titled "TV Channel" or "Cable Channel," depending on the position of the Antenna/Cable DIP switch on the rear panel.*

Using the Windows-based control software Help

The AVT 100 Windows-based control software contains a Help program, which explains all menu options, buttons, and functions that are accessible from the AVT 100 window.

To open Help, select Contents... from the Help pull-down menu on the AVT 100 window.

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Appendix A

Specifications, Part Numbers, and Accessories

Specifications

Models

Included Parts

Optional Accessories

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Specifications

RF video input

Number/signal type	1 radio frequency (RF)
Connectors	
NTSC model	1 female F connector
PAL model	1 female IEC 169-2, 75 ohm connector
Sensitivity	-20 to +20 dBmV
Frequency range	55 MHz to 855 MHz
NTSC over the air TV channels	2 to 69
NTSC CATV cable channels	2 to 125
PAL over the air TV and cable channels	48 MHz to 855 MHz
Impedance	75 ohms
Vertical frequency	
NTSC model	60 Hz
PAL model	50 Hz

Video output

Number/signal type	1 composite video
Connectors	1 BNC female
Nominal level	1 Vp-p for composite video
Minimum/maximum levels	0.4 V to 1.0 Vp-p (follows input)
Impedance	75 ohms
DC offset	±10 mV with input at 0 offset

Sync

Standards	
NTSC model	NTSC 3.58
International model	PAL

Audio

THD + Noise	NTSC: 0.4% @ 1 kHz PAL: 0.6% @ 1 kHz
S/N	NTSC: -55 dB @ 1 kHz PAL: -58 dB @ 1 kHz
Stereo channel separation	>35 dB @ 1 kHz

RF audio input

Number/signal type	1 (as part of the RF signal)

NOTE *0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu*

Audio output

Number/signal type	1 balanced/unbalanced; stereo for NTSC, PAL B/G, PAL D/K; mono only for PAL I
Connectors	(1) 3.5 mm captive screw connector, 5 pole
Impedance	50 ohms unbalanced, 100 ohms balanced
Gain error	± 0.5 dB channel to channel
Nominal level	0 dBu
Output level	1 Vrms (max.)

Control/remote — tuner

Serial control port	RS-232; 3.5 mm captive screw connector, 5 pole
Baud rate and protocol	9600 baud, 8 data bits, 1 stop bit, no parity
Serial/IR control pin configurations	1 = TX, 2 = RX, 3 = GND, 4 = modulated IR, 5 = +12 VDC
IR controller module	AVT Remote (optional) 30′ maximum, 40 degrees off axis
Program control	Extron's control/configuration program for Windows® Extron's Simple Instruction Set (SIS™)

General

External power supply	100 VAC to 240 VAC, 50/60 Hz, external, autoswitchable; to 12 VDC, 1 A (max.), regulated
Power input requirements	12 VDC, 0.5 A
Temperature/humidity	Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing Operating: +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing
Rack mount	Yes, with optional 1U rack shelf, part #60-190-01 or 60-604-01
Enclosure type	Metal
Enclosure dimensions	1.7" H x 4.3" W x 6.7" D (1U high, quarter rack wide) 4.3 cm H x 10.9 cm W x 17.0 cm D (Depth excludes connectors.)
Product weight	0.8 lbs (0.4 kg)
Shipping weight	3 lbs (2 kg)
Vibration	ISTA 1A in carton (International Safe Transit Association)

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Compliances ..... CE, FCC Class A, VCCI, AS/NZS, ICES
MTBF ..... 30,000 hours
Warranty ..... 3 years parts and labor

NOTE *All nominal levels are at ±10%.*

NOTE *Specifications are subject to change without notice.*

Models

Model	Part number
AVT 100 - NTSC Version	60-647-01
AVT 100 - PAL Version	60-647-02

Included Parts

These items are included in each order for an AVT 100:

Windows-based control software on disk
Power cord
Tweeker (small screwdriver)
Rubber feet (not attached)
AVT 100 User's Manual
External power supply
5-pin captive screw connector

Optional Accessories

These items can be ordered separately:

Accessories	Part number
1U, 9.5" RSU 129 Universal rack shelf 1U, 9.5" RSB 129 Basic rack shelf	60-190-01 or 60-604-01
AVT 100 IR Remote kit	70-366-01
IR Link	60-404-01, 60-404-02, or 60-404-03

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Appendix B

Channel Frequencies

PAL Format Channels

NTSC Format Channels

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PAL Format Channels

The table on the following pages lists all the antenna and CATV channels that are available through the AVT 100 in areas using the PAL standard.

The AVT 100 display shows only whole numbers; it does not show decimal fractions. Therefore, when a PAL channel number is displayed, it does not reflect the exact frequency of that channel. To find out the exact tuning frequency for a PAL channel, locate the channel number in the Channel column, then find its frequency (stated in MHz) beside it in the Freq (MHz) column.

Example: The frequency for channel 82 is 82.25 MHz.

PAL channels

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
48	48.25	93	93.25	138	138.25
49	49.25	94	94.25	139	139.25
50	50.25	95	95.25	140	140.25
51	51.25	96	96.25	141	141.25
52	52.25	97	97.25	142	142.25
53	53.25	98	98.25	143	143.25
54	54.25	99	99.25	144	144.25
55	55.25	100	100.25	145	145.25
56	56.25	101	101.25	146	146.25
57	57.25	102	102.25	147	147.25
58	58.25	103	103.25	148	148.25
59	59.25	104	104.25	149	149.25
60	60.25	105	105.25	150	150.25
61	61.25	106	106.25	151	151.25
62	62.25	107	107.25	152	152.25
63	63.25	108	108.25	153	153.25
64	64.25	109	109.25	154	154.25
65	65.25	110	110.25	155	155.25
66	66.25	111	111.25	156	156.25
67	67.25	112	112.25	157	157.25
68	68.25	113	113.25	158	158.25
69	69.25	114	114.25	159	159.25
70	70.25	115	115.25	160	160.25
71	71.25	116	116.25	161	161.25
72	72.25	117	117.25	162	162.25
73	73.25	118	118.25	163	163.25
74	74.25	119	119.25	164	164.25
75	75.25	120	120.25	165	165.25
76	76.25	121	121.25	166	166.25
77	77.25	122	122.25	167	167.25
78	78.25	123	123.25	168	168.25
79	79.25	124	124.25	169	169.25
80	80.25	125	125.25	170	170.25
81	81.25	126	126.25	171	171.25
82	82.25	127	127.25	172	172.25
83	83.25	128	128.25	173	173.25
84	84.25	129	129.25	174	174.25
85	85.25	130	130.25	175	175.25
86	86.25	131	131.25	176	176.25
87	87.25	132	132.25	177	177.25
88	88.25	133	133.25	178	178.25
89	89.25	134	134.25	179	179.25
90	90.25	135	135.25	180	180.25
91	91.25	136	136.25	181	181.25
92	92.25	137	137.25	182	182.25

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PAL channels (continued)

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
183	183.25	228	228.25	273	273.25
184	184.25	229	229.25	274	274.25
185	185.25	230	230.25	275	275.25
186	186.25	231	231.25	276	276.25
187	187.25	232	232.25	277	277.25
188	188.25	233	233.25	278	278.25
189	189.25	234	234.25	279	279.25
190	190.25	235	235.25	280	280.25
191	191.25	236	236.25	281	281.25
192	192.25	237	237.25	282	282.25
193	193.25	238	238.25	283	283.25
194	194.25	239	239.25	284	284.25
195	195.25	240	240.25	285	285.25
196	196.25	241	241.25	286	286.25
197	197.25	242	242.25	287	287.25
198	198.25	243	243.25	288	288.25
199	199.25	244	244.25	289	289.25
200	200.25	245	245.25	290	290.25
201	201.25	246	246.25	291	291.25
202	202.25	247	247.25	292	292.25
203	203.25	248	248.25	293	293.25
204	204.25	249	249.25	294	294.25
205	205.25	250	250.25	295	295.25
206	206.25	251	251.25	296	296.25
207	207.25	252	252.25	297	297.25
208	208.25	253	253.25	298	298.25
209	209.25	254	254.25	299	299.25
210	210.25	255	255.25	300	300.25
211	211.25	256	256.25	301	301.25
212	212.25	257	257.25	302	302.25
213	213.25	258	258.25	303	303.25
214	214.25	259	259.25	304	304.25
215	215.25	260	260.25	305	305.25
216	216.25	261	261.25	306	306.25
217	217.25	262	262.25	307	307.25
218	218.25	263	263.25	308	308.25
219	219.25	264	264.25	309	309.25
220	220.25	265	265.25	310	310.25
221	221.25	266	266.25	311	311.25
222	222.25	267	267.25	312	312.25
223	223.25	268	268.25	313	313.25
224	224.25	269	269.25	314	314.25
225	225.25	270	270.25	315	315.25
226	226.25	271	271.25	316	316.25
227	227.25	272	272.25	317	317.25

PAL channels (continued)

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
318	318.25	363	363.25	408	408.25
319	319.25	364	364.25	409	409.25
320	320.25	365	365.25	410	410.25
321	321.25	366	366.25	411	411.25
322	322.25	367	367.25	412	412.25
323	323.25	368	368.25	413	413.25
324	324.25	369	369.25	414	414.25
325	325.25	370	370.25	415	415.25
326	326.25	371	371.25	416	416.25
327	327.25	372	372.25	417	417.25
328	328.25	373	373.25	418	418.25
329	329.25	374	374.25	419	419.25
330	330.25	375	375.25	420	420.25
331	331.25	376	376.25	421	421.25
332	332.25	377	377.25	422	422.25
333	333.25	378	378.25	423	423.25
334	334.25	379	379.25	424	424.25
335	335.25	380	380.25	425	425.25
336	336.25	381	381.25	426	426.25
337	337.25	382	382.25	427	427.25
338	338.25	383	383.25	428	428.25
339	339.25	384	384.25	429	429.25
340	340.25	385	385.25	430	430.25
341	341.25	386	386.25	431	431.25
342	342.25	387	387.25	432	432.25
343	343.25	388	388.25	433	433.25
344	344.25	389	389.25	434	434.25
345	345.25	390	390.25	435	435.25
346	346.25	391	391.25	436	436.25
347	347.25	392	392.25	437	437.25
348	348.25	393	393.25	438	438.25
349	349.25	394	394.25	439	439.25
350	350.25	395	395.25	440	440.25
351	351.25	396	396.25	441	441.25
352	352.25	397	397.25	442	442.25
353	353.25	398	398.25	443	443.25
354	354.25	399	399.25	444	444.25
355	355.25	400	400.25	445	445.25
356	356.25	401	401.25	446	446.25
357	357.25	402	402.25	447	447.25
358	358.25	403	403.25	448	448.25
359	359.25	404	404.25	449	449.25
360	360.25	405	405.25	450	450.25
361	361.25	406	406.25	451	451.25
362	362.25	407	407.25	452	452.25

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PAL channels (continued)

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
453	453.25	498	498.25	543	543.25
454	454.25	499	499.25	544	544.25
455	455.25	500	500.25	545	545.25
456	456.25	501	501.25	546	546.25
457	457.25	502	502.25	547	547.25
458	458.25	503	503.25	548	548.25
459	459.25	504	504.25	549	549.25
460	460.25	505	505.25	550	550.25
461	461.25	506	506.25	551	551.25
462	462.25	507	507.25	552	552.25
463	463.25	508	508.25	553	553.25
464	464.25	509	509.25	554	554.25
465	465.25	510	510.25	555	555.25
466	466.25	511	511.25	556	556.25
467	467.25	512	512.25	557	557.25
468	468.25	513	513.25	558	558.25
469	469.25	514	514.25	559	559.25
470	470.25	515	515.25	560	560.25
471	471.25	516	516.25	561	561.25
472	472.25	517	517.25	562	562.25
473	473.25	518	518.25	563	563.25
474	474.25	519	519.25	564	564.25
475	475.25	520	520.25	565	565.25
476	476.25	521	521.25	566	566.25
477	477.25	522	522.25	567	567.25
478	478.25	523	523.25	568	568.25
479	479.25	524	524.25	569	569.25
480	480.25	525	525.25	570	570.25
481	481.25	526	526.25	571	571.25
482	482.25	527	527.25	572	572.25
483	483.25	528	528.25	573	573.25
484	484.25	529	529.25	574	574.25
485	485.25	530	530.25	575	575.25
486	486.25	531	531.25	576	576.25
487	487.25	532	532.25	577	577.25
488	488.25	533	533.25	578	578.25
489	489.25	534	534.25	579	579.25
490	490.25	535	535.25	580	580.25
491	491.25	536	536.25	581	581.25
492	492.25	537	537.25	582	582.25
493	493.25	538	538.25	583	583.25
494	494.25	539	539.25	584	584.25
495	495.25	540	540.25	585	585.25
496	496.25	541	541.25	586	586.25
497	497.75	542	542.25	587	587.25

PAL channels (continued)

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
588	588.25	633	633.25	678	678.25
589	589.25	634	634.25	679	679.25
590	590.25	635	635.25	680	680.25
591	591.25	636	636.25	681	681.25
592	592.25	637	637.25	682	682.25
593	593.25	638	638.25	683	683.25
594	594.25	639	639.25	684	684.25
595	595.25	640	640.25	685	685.25
596	596.25	641	641.25	686	686.25
597	597.25	642	642.25	687	687.25
598	598.25	643	643.25	688	688.25
599	599.25	644	644.25	689	689.25
600	600.25	645	645.25	690	690.25
601	601.25	646	646.25	691	691.25
602	602.25	647	647.25	692	692.25
603	603.25	648	648.25	693	693.25
604	604.25	649	649.25	694	694.25
605	605.25	650	650.25	695	695.25
606	606.25	651	651.25	696	696.25
607	607.25	652	652.25	697	697.25
608	608.25	653	653.25	698	698.25
609	609.25	654	654.25	699	699.25
610	610.25	655	655.25	700	700.25
611	611.25	656	656.25	701	701.25
612	612.25	657	657.25	702	702.25
613	613.25	658	658.25	703	703.25
614	614.25	659	659.25	704	704.25
615	615.25	660	660.25	705	705.25
616	616.25	661	661.75	706	706.25
617	617.25	662	662.25	707	707.25
618	618.25	663	663.25	708	708.25
619	619.25	664	664.25	709	709.25
620	620.25	665	665.25	710	710.25
621	621.25	666	666.25	711	711.25
622	622.25	667	667.25	712	712.25
623	623.25	668	668.25	713	713.25
624	624.25	669	669.25	714	714.25
625	625.25	670	670.25	715	715.25
626	626.25	671	671.25	716	716.25
627	627.25	672	672.25	717	717.25
628	628.25	673	673.25	718	718.25
629	629.25	674	674.25	719	719.25
630	630.25	675	675.25	720	720.25
631	631.25	676	676.25	721	721.25
632	632.25	677	677.25	722	722.25

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PAL channels (continued)

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
723	723.25	768	768.25	813	813.25
724	724.25	769	769.25	814	814.25
725	725.25	770	770.25	815	815.25
726	726.25	771	771.25	816	816.25
727	727.25	772	772.25	817	817.25
728	728.25	773	773.25	818	818.25
729	729.25	774	774.25	819	819.25
730	730.25	775	775.25	820	820.25
731	731.25	776	776.25	821	821.25
732	732.25	777	777.25	822	822.25
733	733.25	778	778.25	823	823.25
734	734.25	779	779.25	824	824.25
735	735.25	780	780.25	825	825.25
736	736.25	781	781.25	826	826.25
737	737.25	782	782.25	827	827.25
738	738.25	783	783.25	828	828.25
739	739.25	784	784.25	829	829.25
740	740.25	785	785.25	830	830.25
741	741.25	786	786.25	831	831.25
742	742.25	787	787.25	832	832.25
743	743.75	788	788.25	833	833.75
744	744.25	789	789.25	834	834.25
745	745.25	790	790.25	835	835.25
746	746.25	791	791.25	836	836.25
747	747.25	792	792.25	837	837.25
748	748.25	793	793.25	838	838.25
749	749.25	794	794.25	839	839.25
750	750.25	795	795.25	840	840.25
751	751.25	796	796.25	841	841.25
752	752.25	797	797.25	842	842.25
753	753.25	798	798.25	843	843.25
754	754.25	799	799.25	844	844.25
755	755.25	800	800.25	845	845.25
756	756.25	801	801.25	846	846.25
757	757.25	802	802.25	847	847.25
758	758.25	803	803.25	848	848.25
759	759.25	804	804.25	849	849.25
760	760.25	805	805.25	850	850.25
761	761.25	806	806.25	851	851.25
762	762.25	807	807.25	852	852.25
763	763.25	808	808.25	853	853.25
764	764.25	809	809.25	854	854.25
765	765.25	810	810.25	855	855.25
766	766.25	811	811.25		
767	767.25	812	812.25		

NTSC Format Channels

The tables on the following pages list all the antenna (TV) and CATV (cable) channels that are available through the AVT 100 in areas using the NTSC standard (including the US). Tables are included for three cable channel frequencies: Standard, IRC, and HRC.

The AVT 100 display shows the NTSC channel numbers. To find out the exact tuning frequency for a channel, locate the channel number in the Channel column, then find its frequency (stated in MHz) beside it in the Freq (MHz) column.

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NTSC TV channels

Channel	Freq (MHz)	Channel	Freq (MHz)
2	55.25	46	663.25
3	61.25	47	669.25
4	67.25	48	675.25
5	77.25	49	681.25
6	83.25	50	687.25
7	175.25	51	693.25
8	181.25	52	699.25
9	187.25	53	705.25
10	193.25	54	711.25
11	199.25	55	717.25
12	205.25	56	723.25
13	211.25	57	729.25
14	471.25	58	735.25
15	477.25	59	741.25
16	483.25	60	747.25
17	489.25	61	753.25
18	495.25	62	759.25
19	501.25	63	765.25
20	507.25	64	771.25
21	513.25	65	777.25
22	519.25	66	783.25
23	525.25	67	789.25
24	531.25	68	795.25
25	537.25	69	801.25
26	543.25		
27	549.25		
28	555.25		
29	561.25		
30	567.25		
31	573.25		
32	579.25		
33	585.25		
34	591.25		
35	597.25		
36	603.25		
37	609.25		
38	615.25		
39	621.25		
40	627.25		
41	633.25		
42	639.25		
43	645.25		
44	651.25		
45	657.25		

NTSC cable channels — Standard frequency

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
2	55.25	46	355.25	90	619.25
3	61.25	47	361.25	91	625.25
4	67.25	48	367.25	92	631.25
5	77.25	49	373.25	93	637.25
6	83.25	50	379.25	94	643.25
7	175.25	51	385.25	95	91.25
8	181.25	52	391.25	96	97.25
9	187.25	53	397.25	97	103.25
10	193.25	54	403.25	98	109.25
11	199.25	55	409.25	99	115.25
12	205.25	56	415.25	100	649.25
13	211.25	57	421.25	101	655.25
14	121.25	58	427.25	102	661.25
15	127.25	59	433.25	103	667.25
16	133.25	60	439.25	104	673.25
17	139.25	61	445.25	105	679.25
18	145.25	62	451.25	106	685.25
19	151.25	63	457.25	107	691.25
20	157.25	64	463.25	108	697.25
21	163.25	65	469.25	109	703.25
22	169.25	66	475.25	110	709.25
23	217.25	67	481.25	111	715.25
24	223.25	68	487.25	112	721.25
25	229.25	69	493.25	113	727.25
26	235.25	70	499.25	114	733.25
27	241.25	71	505.25	115	739.25
28	247.25	72	511.25	116	745.25
29	253.25	73	517.25	117	751.25
30	259.25	74	523.25	118	757.25
31	265.25	75	529.25	119	763.25
32	271.25	76	535.25	120	769.25
33	277.25	77	541.25	121	775.25
34	283.25	78	547.25	122	781.25
35	289.25	79	553.25	123	787.25
36	295.25	80	559.25	124	793.25
37	301.25	81	565.25	125	799.25
38	307.25	82	571.25		
39	313.25	83	577.25		
40	319.25	84	583.25		
41	325.25	85	589.25		
42	331.25	86	595.25		
43	337.25	87	601.25		
44	343.25	88	607.25		
45	349.25	89	613.25		

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NTSC cable channels — IRC frequency

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
2	55.25	46	355.25	90	619.25
3	61.25	47	361.25	91	625.25
4	67.25	48	367.25	92	631.25
5	79.25	49	373.25	93	637.25
6	85.25	50	379.25	94	643.25
7	175.25	51	385.25	95	91.25
8	181.25	52	391.25	96	97.25
9	187.25	53	397.25	97	103.25
10	193.25	54	403.25	98	109.25
11	199.25	55	409.25	99	115.25
12	205.25	56	415.25	100	649.25
13	211.25	57	421.25	101	655.25
14	121.25	58	427.25	102	661.25
15	127.25	59	433.25	103	667.25
16	133.25	60	439.25	104	673.25
17	139.25	61	445.25	105	679.25
18	145.25	62	451.25	106	685.25
19	151.25	63	457.25	107	691.25
20	157.25	64	463.25	108	697.25
21	163.25	65	469.25	109	703.25
22	169.25	66	475.25	110	709.25
23	217.25	67	481.25	111	715.25
24	223.25	68	487.25	112	721.25
25	229.25	69	493.25	113	727.25
26	235.25	70	499.25	114	733.25
27	241.25	71	505.25	115	739.25
28	247.25	72	511.25	116	745.25
29	253.25	73	517.25	117	751.25
30	259.25	74	523.25	118	757.25
31	265.25	75	529.25	119	763.25
32	271.25	76	535.25	120	769.25
33	277.25	77	541.25	121	775.25
34	283.25	78	547.25	122	781.25
35	289.25	79	553.25	123	787.25
36	295.25	80	559.25	124	793.25
37	301.25	81	565.25	125	799.25
38	307.25	82	571.25		
39	313.25	83	577.25		
40	319.25	84	583.25		
41	325.25	85	589.25		
42	331.25	86	595.25		
43	337.25	87	601.25		
44	343.25	88	607.25		
45	349.25	89	613.25		

NTSC cable channels — HRC frequency

Channel	Freq (MHz)	Channel	Freq (MHz)	Channel	Freq (MHz)
2	54.00	46	354.00	90	618.00
3	60.00	47	360.00	91	624.00
4	66.00	48	366.00	92	630.00
5	78.00	49	372.00	93	636.00
6	84.00	50	378.00	94	642.00
7	174.00	51	384.00	95	90.00
8	180.00	52	390.00	96	96.00
9	186.00	53	396.00	97	102.00
10	192.00	54	402.00	98	108.00
11	198.00	55	408.00	99	114.00
12	204.00	56	414.00	100	648.00
13	210.00	57	420.00	101	654.00
14	120.00	58	426.00	102	660.00
15	126.00	59	432.00	103	666.00
16	132.00	60	438.00	104	672.00
17	138.00	61	444.00	105	678.00
18	144.00	62	450.00	106	684.00
19	150.00	63	456.00	107	690.00
20	156.00	64	463.00	108	696.00
21	162.00	65	468.00	109	702.00
22	168.00	66	474.00	110	708.00
23	216.00	67	480.00	111	714.00
24	222.00	68	486.00	112	720.00
25	228.00	69	492.00	113	726.00
26	234.00	70	498.00	114	732.00
27	240.00	71	504.00	115	738.00
28	246.00	72	510.00	116	744.00
29	252.00	73	516.00	117	750.00
30	258.00	74	522.00	118	756.00
31	264.00	75	528.00	119	762.00
32	270.00	76	534.00	120	768.00
33	276.00	77	540.00	121	774.00
34	282.00	78	546.00	122	780.00
35	288.00	79	552.00	123	786.00
36	294.00	80	558.00	124	792.00
37	300.00	81	564.00	125	798.00
38	306.00	82	570.00		
39	312.00	83	576.00		
40	318.00	84	582.00		
41	324.00	85	588.00		
42	330.00	86	594.00		
43	336.00	87	600.00		
44	342.00	88	606.00		
45	348.00	89	612.00		

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Channel Frequencies, cont'd

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